O I P E JC160
NOV 0 6 2001
PATENT & TRADEMARK OFFICE

RECEIVED
NOV 2 8 2001
TECH CENTER 1600/2900

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

HERMON-TAYLOR et al Atty. Ref.: **117-319**

RECEIVED
NOV 0 8 2001
TECH CENTER 1600/2900

Serial No. **09/646,568** Group: **1645**

Filed: **November 9, 2000** Examiner:

For: **DIAGNOSTICS AND VACCINES FOR MYCOBACTERIAL INFECTIONS OF ANIMALS AND HUMANS**

* * * * * * * * * * *

November 6, 2001

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

STATEMENT

The attached paper and computer-readable copies of the Sequence Listing are the same. No new matter has been added.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: ______________________
B. J. Sadoff
Reg. No. **36,663**

BJS:eaw
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

574255

SEQUENCE LISTING

<110> ST GEORGE'S HOSPITAL MEDICAL SCHOOL

<120> DIAGNOSTICS AND VACCINES FOR MYCOBACTERIAL INFECTIONS
OF ANIMALS AND HUMANS

<130> N74368B DMG

<140> US 09/646.568
<141> 2000-09-11

<150> PCT/GB99/00849
<151> 1999-03-18

<150> UK 9806093.2
<151> 1998-03-20

<160> 5

<170> PatentIn Ver. 2.1

<210> 1
<211> 1335
<212> DNA
<213> Mycobacterium avium

<400> 1
gtgactgaag ccaatgagtg caactcggcg tcgcgaaagg tttcagtcgc ggttgagcaa 60
gacaccgcaa gactactgga gtgcgtgcac aagcgccccc agctcgcggc tgaaagcgga 120
tgcaaagggg ttcgaagctt gagcaacatg cgaaggggag aacggcctat gagcctggga 180
caggttttcg acccgcgcgc gaatgcactt aatgcgtggc gcttggtgtt ggcgagcggg 240
gtgatcctat ggcattcgtt tccgctcact ggacgtatgc cgtgggcgcc gttcgtccag 300
ttgcttggcc ttggatgcgt tgatggtttc tttgcggtct ccggctatct catcgtctcg 360
agctggcttc gcaacccgca tcccgcccaa tacttcaccg ctcgatgtct tcgtattctc 420
ccgggtctgt ggatctgtct catcttgacg gcgtttgtca tcgctccgat aggtgtgggc 480
gcccagggcg gttcggccgc gaaactactg atgtccggcg ctccgatcga gtatgtgcta 540
aaagacagtg cggtttggat ggttaagttc gatatcggtg gcacacctcg cgatattcca 600
gttgcgggta tttggaacgg ttctctgtgg acattgggtt gggaggtgct ttgctatatc 660
ggcgtagcag tatttggtat gctcggactt cttagtcgcc gttggttcgt tccagggata 720
ttgatcctgg cgctgtcgtg gtcggtgttc ttgccggcat ggggcggaat acacgcgatc 780
gcctccaatg ctgcgcgatt cgctgtgatg ttttcggccg gagcgttgct gtatcaattc 840
cgtaacgtga ttccggctcg gtggtccttc gttgccgtcg gcctcattat cgttgtggtt 900
tcctctgccg tgctgccgga ctaccggttg gtggcggccc ttccgatggc gtacctaatc 960
atcgcttcgg gttcgctcat ccacaatcaa aggatgaggt tccgcaccga tctatcctat 1020
ggagtatata tttatgcgtt tccaattcag caagtgctgg tcctgtgtgg attcgccgag 1080
ataaatccaa tcgctttctg cgcgatttct gtcgcagcta ttttgccgct cgccgcgctc 1140
agttggttct tggtcgagaa acctgcgttg tcctggaaga gtcgtctccg gcggaaaaac 1200
agttcaattg cgctagccaa tatggaagat ggtggatcag tcggccgctc aaatgacatt 1260
cccggaaggc gggcccgctt tattggcgag aaagccgaag atcctcccgc gccgagccca 1320
agaccggctt tgtaa 1335

<210> 2
<211> 444
<212> PRT
<213> Mycobacterium avium

<400> 2
Val Thr Glu Ala Asn Glu Cys Asn Ser Ala Ser Arg Lys Val Ser Val
1 5 10 15

Ala Val Glu Gln Asp Thr Ala Arg Leu Leu Glu Cys Val His Lys Arg
20 25 30

Pro Gln Leu Ala Ala Glu Ser Gly Cys Lys Gly Val Arg Ser Leu Ser
35 40 45

Asn Met Arg Arg Gly Glu Arg Pro Met Ser Leu Gly Gln Val Phe Asp
50 55 60

Pro Arg Ala Asn Ala Leu Asn Ala Trp Arg Leu Val Leu Ala Ser Gly
65 70 75 80

Val Ile Leu Trp His Ser Phe Pro Leu Thr Gly Arg Met Pro Trp Ala
85 90 95

Pro Phe Val Gln Leu Leu Gly Leu Gly Cys Val Asp Gly Phe Phe Ala
100 105 110

Val Ser Gly Tyr Leu Ile Val Ser Ser Trp Leu Arg Asn Pro His Pro
115 120 125

Ala Gln Tyr Phe Thr Ala Arg Cys Leu Arg Ile Leu Pro Gly Leu Trp
130 135 140

Ile Cys Leu Ile Leu Thr Ala Phe Val Ile Ala Pro Ile Gly Val Gly
145 150 155 160

Ala Gln Gly Gly Ser Ala Ala Lys Leu Leu Met Ser Gly Ala Pro Ile
165 170 175

Glu Tyr Val Leu Lys Asp Ser Ala Val Trp Met Val Lys Phe Asp Ile
180 185 190

Gly Gly Thr Pro Arg Asp Ile Pro Val Ala Gly Ile Trp Asn Gly Ser
195 200 205

Leu Trp Thr Leu Gly Trp Glu Val Leu Cys Tyr Ile Gly Val Ala Val
210 215 220

Phe Gly Met Leu Gly Leu Leu Ser Arg Arg Trp Phe Val Pro Gly Ile
225 230 235 240

Leu Ile Leu Ala Leu Ser Trp Ser Val Phe Leu Pro Ala Trp Gly Gly
245 250 255

Ile His Ala Ile Ala Ser Asn Ala Ala Arg Phe Ala Val Met Phe Ser
260 265 270

Ala Gly Ala Leu Leu Tyr Gln Phe Arg Asn Val Ile Pro Ala Arg Trp
275 280 285

Ser Phe Val Ala Val Gly Leu Ile Ile Val Val Val Ser Ser Ala Val
290 295 300

Leu Pro Asp Tyr Arg Leu Val Ala Ala Leu Pro Met Ala Tyr Leu Ile
305 310 315 320

Ile Ala Ser Gly Ser Leu Ile His Asn Gln Arg Met Arg Phe Arg Thr
325 330 335

Asp Leu Ser Tyr Gly Val Tyr Ile Tyr Ala Phe Pro Ile Gln Gln Val
340 345 350

Leu Val Leu Cys Gly Phe Ala Glu Ile Asn Pro Ile Ala Phe Cys Ala
355 360 365

Ile Ser Val Ala Ala Ile Leu Pro Leu Ala Ala Leu Ser Trp Phe Leu
370 375 380

Val Glu Lys Pro Ala Leu Ser Trp Lys Ser Arg Leu Arg Arg Lys Asn
385 390 395 400

Ser Ser Ile Ala Leu Ala Asn Met Glu Asp Gly Gly Ser Val Gly Arg
405 410 415

Ser Asn Asp Ile Pro Gly Arg Arg Ala Arg Phe Ile Gly Glu Lys Ala
420 425 430

Glu Asp Pro Pro Ala Pro Ser Pro Arg Pro Ala Leu
435 440

<210> 3
<211> 2543
<212> DNA
<213> Mycobacterium avium

<400> 3
atgcactgtc aatggccaag tagaagtccc cgctggtggc cagcagaagt ccccactccg 60
ctgcgggtgg ttggctaatt cttggcggct cccttcttgt ggtcggcgtg gcgcatccgg 120
taggactcgc cggaggtgac gacgatgctg gcgtggtgca gcagccgatc gaggatgctg 180
gcggcggtgg tgtgctcggg caggaatcgc ccccattgtt cgaagggcca atgcgaggcg 240
atggccaggg agcggcgctc gtagccggca gccacgagcc ggaacaacag ttgagtcccg 300

gtgtcgtcga gcggggcgaa gccgatctcg tccaagatga ccagatccgc gcggagcagg 360
gtgtcgatga tcttgccgac ggtgttgtcg gccaggccgc ggtagaggac ctcgatcagg 420
tcggcggcgg tgaagtagcg gactttgaat ccggcgtgga cggcagcgtg cccgcagccg 480
atgagcaggt gacttttgcc cgtaccaggt gggccaatga ccgccaggtt ctgttgtgcc 540
cgaatccatt ccaggctcga caggtagtcg aacgtggctg cggtgatcga cgatccggtg 600
acgtcgaacc cgtcgagggt cttggtgacc gggaaggctg cggccttgag acggttggcg 660
gtgttggagg catcgcgggc agcgatctcg gcctcaacca acgtccgcag gatctcctcc 720
ggtgtccagc gttgcgtctt ggcgacttgc aacacctcgg cggcgttgcg gcgcaccgtg 780
gccagcttca accgccgcag cgccgcgtca aggtcagcag ccagcggtgc cgccgaggac 840
ggtgccaccg gcttggcagc ggtggtcatg aggccgtccc gtcggtggtg ttgatcttgt 900
aggcctccaa cgagcgggtc tcgacggtgg gcagatcgag cacgagtgcg tcgccggcgg 960
ggcggggttg tggggtgccg gcgccggcgg ccaggatcga gcgcacgtcg gcagcgcgga 1020
accggcgaaa cgcaaccgcc cggcgcagcg cgtcaatcaa agcctgttcg ccgtgggcgg 1080
cgccaaggcc gagcagaatg tcgagttcgg atttcagtcg ggtgttgccg atcgcagcag 1140
caccgacgag gaactgctgc gcttcggttc ccaatgcgca gaatcgtttc tctgcttggg 1200
ttttcgggcg aggaccacgc gagggtgcgg gtctgggtcc gtcgtagtgt tcatcgagga 1260
tggacacctc acctgggctg acgagctcgt gctcggccac gatcacaccg gtcgcaggtt 1320
ccaacaggat cagggcgcca tgatcgacca ccaccgccac ggtggcaccg acgagccgct 1380
gaggcaccga gtaacgagct gagccgtaac ggatgcacga gaggccgtcg accttacggc 1440
gcaccgaccc cgagccgatc gtcggccgca gcgagggcag ctccctcaag acggtgcgct 1500
cgtcaaccaa gcgatcgttg ggcacggcgc agatctccga gtggaccgtg gcattgacct 1560
cggcgcacca tagttgcgcc tgggcgttga gggcacgtag gtcgacctgc tcaccggcta 1620
acgcagcttc ggtcagcagc ggcaccgcaa ggtcgtcctg agcgtagcca cagaggttct 1680
ccacgatgcc cttcgattgc ggatccgcac cgtggcagaa gtccggaacg aagccatagt 1740
gggacgcgaa tcgcacataa tccggtgttg gaacaacaac attggcgacg acaccacctt 1800
tgaggcagcc catccggtcg gccaggatct tggccggaac cccaccgatc gcctcgaggg 1860
cttcggctat catcgcctgc gtggtcgagg ctttctcgtc ggcggcgaac cgctcaaacc 1920
gccaccgcga ataggccagc tccgcgcata acaccatcag ccccggtgcc gcttcggccc 1980
aatccatcac cagatagtca ccgggtgacc agaccgccgg acggcgttga tgccggttag 2040
cgttgcgcca ccatacttcc tgctcggcta ccaggcggcg gaagttacgg gccgagccct 2100
gatacccggc agctcgggcg atcggcagca tccgcttcgc cgacatcttg ccgtgtgatt 2160
tctcgactcg ggtggcgact agatcggtga acgcgtcgag gttgcgtggc cgtggttccc 2220
gcgggggcgc gccaccggcc tcggcccgct cgatgacccg cttgaccgtc ttgtgcgtac 2280
taccgcacag ctcggccgcg ccgcgatacg acccgacctg gtgatacgcc gaaatgatgt 2340
tcatacgctc ccttgcagac ttcaatagag ctccctgggc ggtgatcaag tgacagttgg 2400
cgctatcacc gtcaccgccc aggccctcag ctcccggaaa agacacgacg agcccgctaa 2460
ggagtgggga cttctacctg gccaccagtg gggacttcct actggccaca gatggggact 2520
ttctcatggc catggacatg cac 2543

<210> 4
<211> 2543
<212> DNA
<213> Mycobacterium avium

<400> 4
gtgcatgtcc atggccatga gaaagtcccc atctgtggcc agtaggaagt ccccactggt 60
ggccaggtag aagtccccac tccttagcgg gctcgtcgtg tcttttccgg gagctgaggg 120
cctgggcggt gacggtgata gcgccaactg tcacttgatc accgcccagg gagctctatt 180
gaagtctgca agggagcgta tgaacatcat ttcggcgtat caccaggtcg ggtcgtatcg 240
cggcgcggcc gagctgtgcg gtagtacgca caagacggtc aagcgggtca tcgagcgggc 300
cgaggccggt ggcgcgcccc cgcgggaacc acggccacgc aacctcgacg cgttcaccga 360

tctagtcgcc acccgagtcg agaaatcaca cggcaagatg tcggcgaagc ggatgctgcc 420
gatcgcccga gctgccgggt atcagggctc ggcccgtaac ttccgccgcc tggtagccga 480
gcaggaagta tggtggcgca acgctaaccg gcatcaacgc cgtccggcgg tctggtcacc 540
cggtgactat ctggtgatgg attgggccga agcggcaccg gggctgatgg tgttatgcgc 600
ggagctggcc tattcgcggt ggcggtttga gcggttcgcc gccgacgaga aagcctcgac 660
cacgcaggcg atgatagccg aagccctcga ggcgatcggt ggggttccgg ccaagatcct 720
ggccgaccgg atgggctgcc tcaaaggtgg tgtcgtcgcc aatgttgttg ttccaacacc 780
ggattatgtg cgattcgcgt cccactatgg cttcgttccg gacttctgcc acggtgcgga 840
tccgcaatcg aagggcatcg tggagaacct ctgtggctac gctcaggacg accttgcggt 900
gccgctgctg accgaagctg cgttagccgg tgagcaggtc gacctacgtg ccctcaacgc 960
ccaggcgcaa ctatggtgcg ccgaggtcaa tgccacggtc cactcggaga tctgcgccgt 1020
gcccaacgat cgcttggttg acgagcgcac cgtcttgagg gagctgccct cgctgcggcc 1080
gacgatcggc tcggggtcgg tgcgccgtaa ggtcgacggc ctctcgtgca tccgttacgg 1140
ctcagctcgt tactcggtgc ctcagcggct cgtcggtgcc accgtggcgg tggtggtcga 1200
tcatggcgcc ctgatcctgt tggaacctgc gaccggtgtg atcgtggccg agcacgagct 1260
cgtcagccca ggtgaggtgt ccatcctcga tgaacactac gacggaccca gacccgcacc 1320
ctcgcgtggt cctcgcccga aaacccaagc agagaaacga ttctgcgcat tgggaaccga 1380
agcgcagcag ttcctcgtcg gtgctgctgc gatcggcaac acccgactga aatccgaact 1440
cgacattctg ctcggccttg gcgccgccca cggcgaacag gctttgattg acgcgctgcg 1500
ccgggcggtt gcgtttcgcc ggttccgcgc tgccgacgtg cgctcgatcc tggccgccgg 1560
cgccggcacc ccacaacccc gccccgccgg cgacgcactc gtgctcgatc tgcccaccgt 1620
cgagacccgc tcgttggagg cctacaagat caacaccacc gacgggacgg cctcatgacc 1680
accgctgcca agccggtggc accgtcctcg gcggcaccgc tggctgctga ccttgacgcg 1740
gcgctgcggc ggttgaagct ggccacggtg cgccgcaacg ccgccgaggt gttgcaagtc 1800
gccaagacgc aacgctggac accggaggag atcctgcgga cgttggttga ggccgagatc 1860
gctgcccgcg atgcctccaa caccgccaac cgtctcaagg ccgcagcctt cccggtcacc 1920
aagaccctcg acgggttcga cgtcaccgga tcgtcgatca ccgcagccac gttcgactac 1980
ctgtcgagcc tggaatggat tcgggcacaa cagaacctgg cggtcattgg cccacctggt 2040
acgggcaaaa gtcacctgct catcggctgc gggcacgctg ccgtccacgc cggattcaaa 2100
gtccgctact tcaccgccgc cgacctgatc gaggtcctct accgcggcct ggccgacaac 2160
accgtcggca agatcatcga caccctgctc cgcgcggatc tggtcatctt ggacgagatc 2220
ggcttcgccc cgctcgacga caccgggact caactgttgt tccggctcgt ggctgccggc 2280
tacgagcgcc gctccctggc catcgcctcg cattggccct tcgaacaatg gggcgattc 2340
ctgcccgagc acaccaccgc cgccagcatc ctcgatcggc tgctgcacca cgccagcatc 2400
gtcgtcacct ccggcgagtc ctaccggatg cgccacgccg accacaagaa gggagccgcc 2460
aagaattagc caaccacccg cagcggagtg gggacttctg ctggccacca gcggggactt 2520
ctacttggcc attgacagtg cat 2543

<210> 5
<211> 526
<212> PRT
<213> Mycobacterium avium

<400> 5
Val Ser Phe Pro Gly Ala Glu Gly Leu Gly Gly Asp Gly Asp Ser Ala
1 5 10 15

Asn Cys His Leu Ile Thr Ala Gln Gly Ala Leu Leu Lys Ser Ala Arg
20 25 30

Glu Arg Met Asn Ile Ile Ser Ala Tyr His Gln Val Gly Ser Tyr Arg

35 40 45

Gly Ala Ala Glu Leu Cys Gly Ser Thr His Lys Thr Val Lys Arg Val
50 55 60

Ile Glu Arg Ala Glu Ala Gly Gly Ala Pro Pro Arg Glu Pro Arg Pro
65 70 75 80

Arg Asn Leu Asp Ala Phe Thr Asp Leu Val Ala Thr Arg Val Glu Lys
85 90 95

Ser His Gly Lys Met Ser Ala Lys Arg Met Leu Pro Ile Ala Arg Ala
100 105 110

Ala Gly Tyr Gln Gly Ser Ala Arg Asn Phe Arg Arg Leu Val Ala Glu
115 120 125

Gln Glu Val Trp Trp Arg Asn Ala Asn Arg His Gln Arg Arg Pro Ala
130 135 140

Val Trp Ser Pro Gly Asp Tyr Leu Val Met Asp Trp Ala Glu Ala Ala
145 150 155 160

Pro Gly Leu Met Val Leu Cys Ala Glu Leu Ala Tyr Ser Arg Trp Arg
165 170 175

Phe Glu Arg Phe Ala Ala Asp Glu Lys Ala Ser Thr Thr Gln Ala Met
180 185 190

Ile Ala Glu Ala Leu Glu Ala Ile Gly Gly Val Pro Ala Lys Ile Leu
195 200 205

Ala Asp Arg Met Gly Cys Leu Lys Gly Gly Val Val Ala Asn Val Val
210 215 220

Val Pro Thr Pro Asp Tyr Val Arg Phe Ala Ser His Tyr Gly Phe Val
225 230 235 240

Pro Asp Phe Cys His Gly Ala Asp Pro Gln Ser Lys Gly Ile Val Glu
245 250 255

Asn Leu Cys Gly Tyr Ala Gln Asp Asp Leu Ala Val Pro Leu Leu Thr
260 265 270

Glu Ala Ala Leu Ala Gly Glu Gln Val Asp Leu Arg Ala Leu Asn Ala
275 280 285

Gln Ala Gln Leu Trp Cys Ala Glu Val Asn Ala Thr Val His Ser Glu
290 295 300

Ile Cys Ala Val Pro Asn Asp Arg Leu Val Asp Glu Arg Thr Val Leu

305 310 315 320

Arg Glu Leu Pro Ser Leu Arg Pro Thr Ile Gly Ser Gly Ser Val Arg
325 330 335

Arg Lys Val Asp Gly Leu Ser Cys Ile Arg Tyr Gly Ser Ala Arg Tyr
340 345 350

Ser Val Pro Gln Arg Leu Val Gly Ala Thr Val Ala Val Val Val Asp
355 360 365

His Gly Ala Leu Ile Leu Leu Glu Pro Ala Thr Gly Val Ile Val Ala
370 375 380

Glu His Glu Leu Val Ser Pro Gly Glu Val Ser Ile Leu Asp Glu His
385 390 395 400

Tyr Asp Gly Pro Arg Pro Ala Pro Ser Arg Gly Pro Arg Pro Lys Thr
405 410 415

Gln Ala Glu Lys Arg Phe Cys Ala Leu Gly Thr Glu Ala Gln Gln Phe
420 425 430

Leu Val Gly Ala Ala Ala Ile Gly Asn Thr Arg Leu Lys Ser Glu Leu
435 440 445

Asp Ile Leu Leu Gly Leu Gly Ala Ala His Gly Glu Gln Ala Leu Ile
450 455 460

Asp Ala Leu Arg Arg Ala Val Ala Phe Arg Arg Phe Arg Ala Ala Asp
465 470 475 480

Val Arg Ser Ile Leu Ala Ala Gly Ala Gly Thr Pro Gln Pro Arg Pro
485 490 495

Ala Gly Asp Ala Leu Val Leu Asp Leu Pro Thr Val Glu Thr Arg Ser
500 505 510

Leu Glu Ala Tyr Lys Ile Asn Thr Thr Asp Gly Thr Ala Ser
515 520 525